United States Patent [19]

Gregory et al.

[11] **Patent Number: 5,042,107**

[45] **Date of Patent: Aug. 27, 1991**

[54] **TOOTHBRUSH BRISTLE CLAMP**

[75] Inventors: **Harbert S. Gregory**, 26 Country Club Park, Covington, La. 70433; **Sheldon P. Schmidt**, Paramus, N.J.

[73] Assignee: **Harbert S. Gregory**, Covington, La.

[21] Appl. No.: **432,147**

[22] Filed: **Nov. 6, 1989**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 199,373, May 27, 1988, Pat. No. 4,884,311.

[51] **Int. Cl.**[5] **A46B 17/04**

[52] **U.S. Cl.** ..... **15/257 R;** 15/167.1; 15/184; 15/246; 24/20 R; 206/362.3

[58] **Field of Search** ..... 15/167.1, 168, 184, 15/246, 257 R; 24/20 R, 20 X, 205, 136 R; 206/361, 362.2, 362.3 X; 269/234, 254 R

[56] **References Cited**

U.S. PATENT DOCUMENTS

1,365,411	1/1921	Kearney	24/136 R
2,220,203	11/1940	Branin	24/136 R
2,797,886	7/1957	Pinckney	15/184
2,897,531	8/1959	Calabrese	15/257 R
2,947,412	8/1960	Tupper	15/184
4,858,810	8/1989	Intlekofer et al.	24/136 R

FOREIGN PATENT DOCUMENTS

241090	5/1911	Fed. Rep. of Germany	15/184
915175	7/1946	France	15/246

Primary Examiner—Philip R. Coe
Assistant Examiner—Mark Spisich
Attorney, Agent, or Firm—Jennings, Carter, Thompson & Veal

[57] **ABSTRACT**

A toothbrush holder for training the bristles of a toothbrush into a preferred shape utilizes a pair of opposed cam surfaces to urge a pair of rigid compression members against the sides of the mass of bristles along a line at a predetermined height on the bristles. The resultant bristle structure is maintained by repeated storage of the brush in the holder between use.

3 Claims, 9 Drawing Sheets

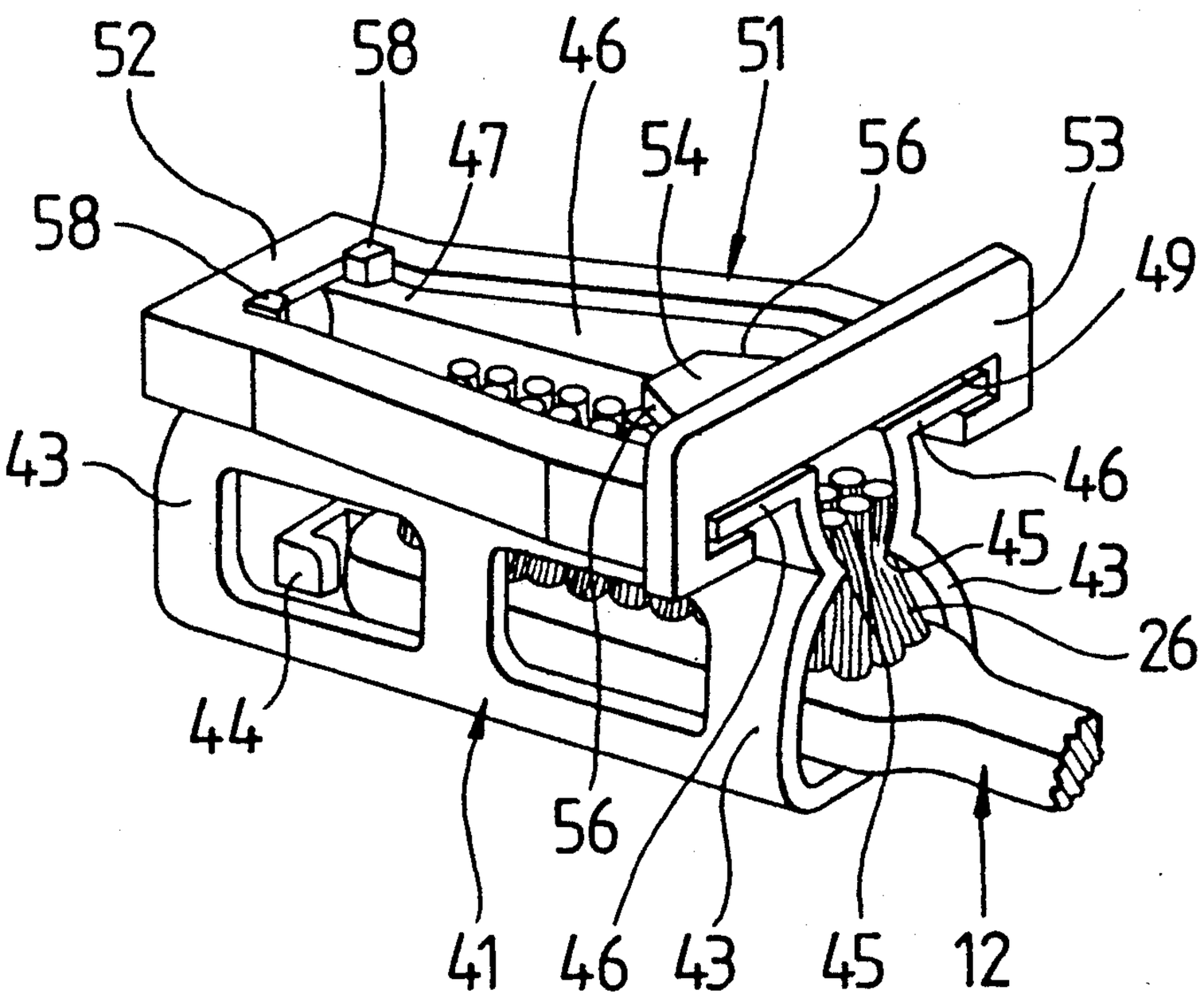


FIG. 1

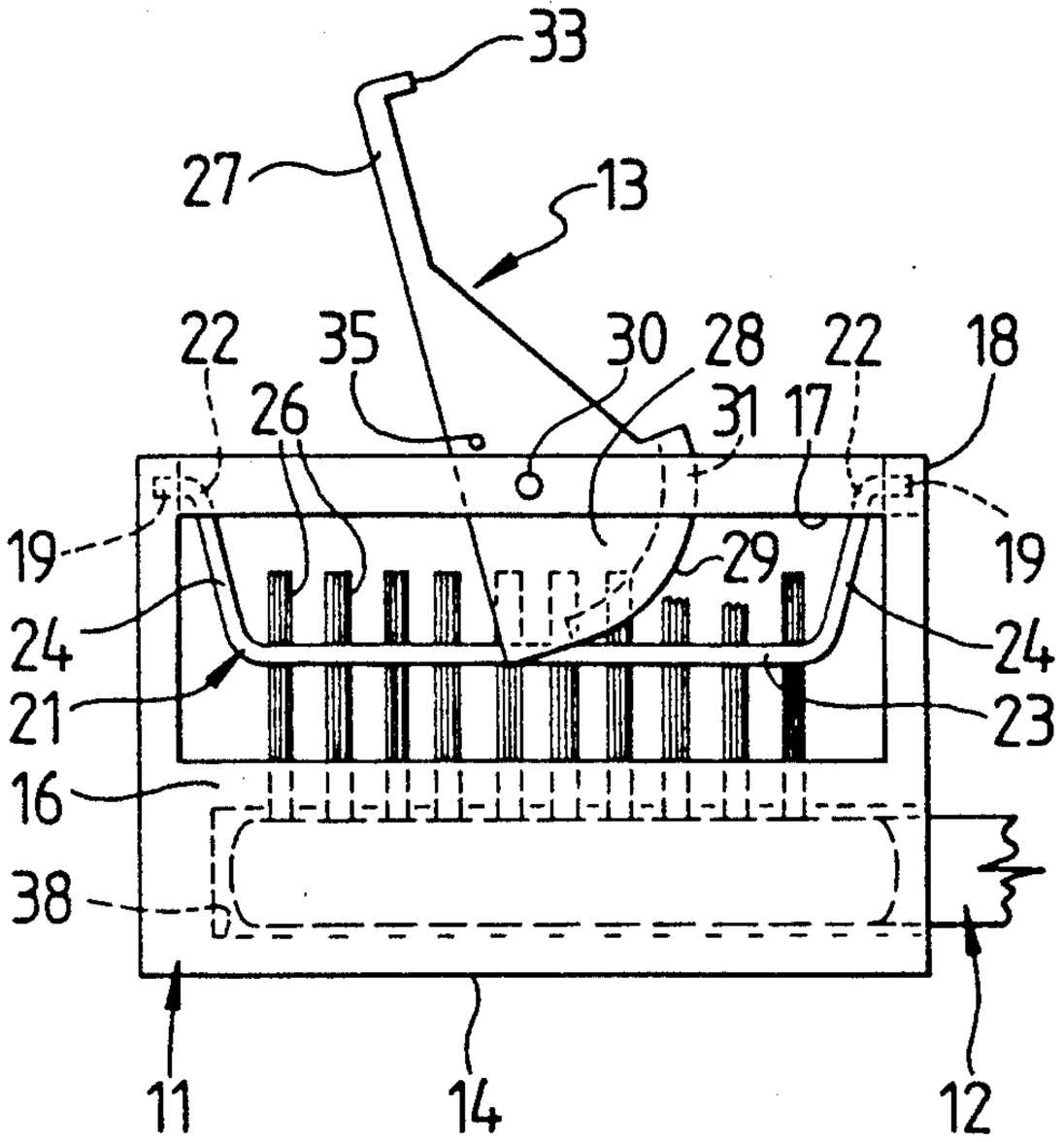


FIG. 2

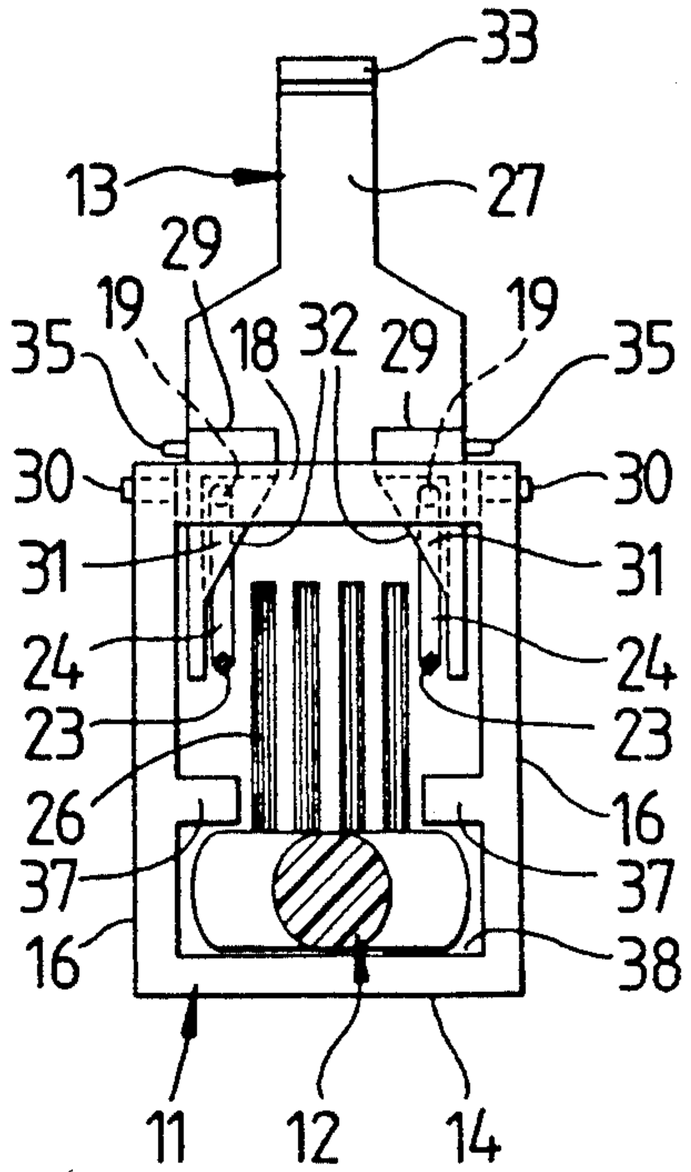


FIG. 3

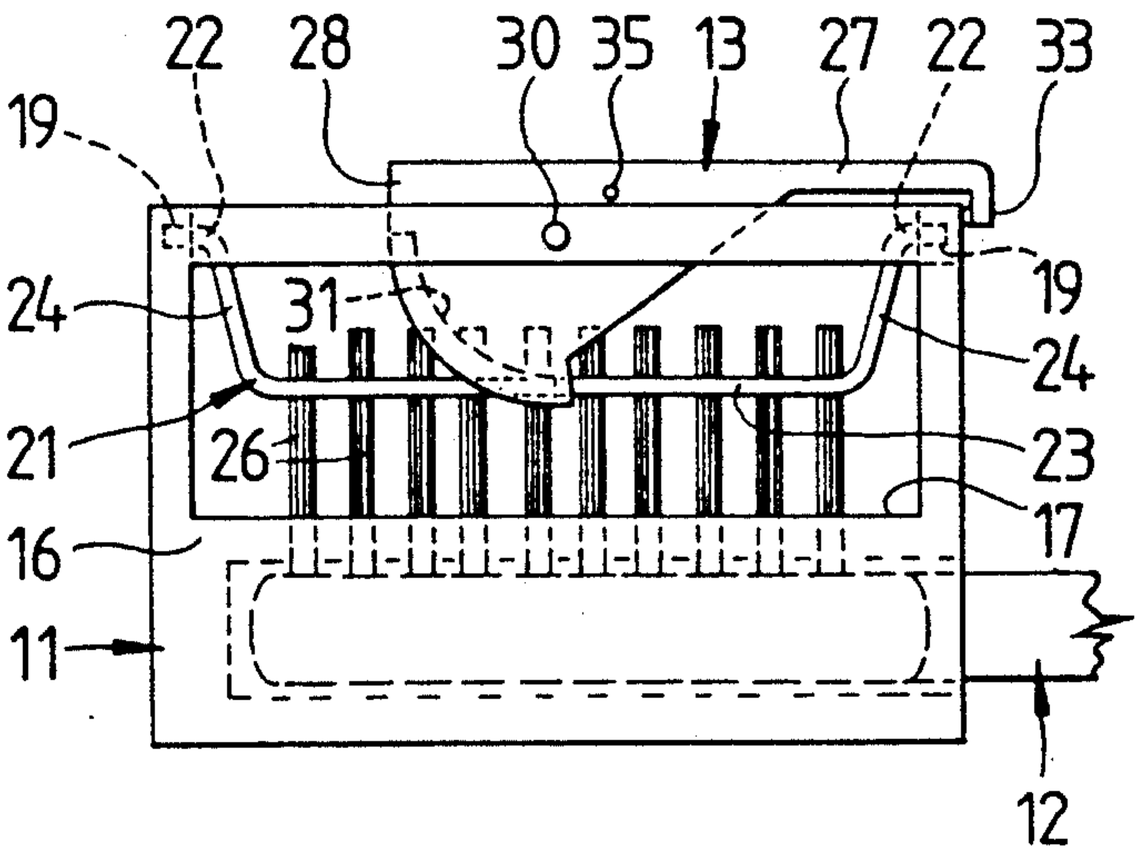


FIG. 4

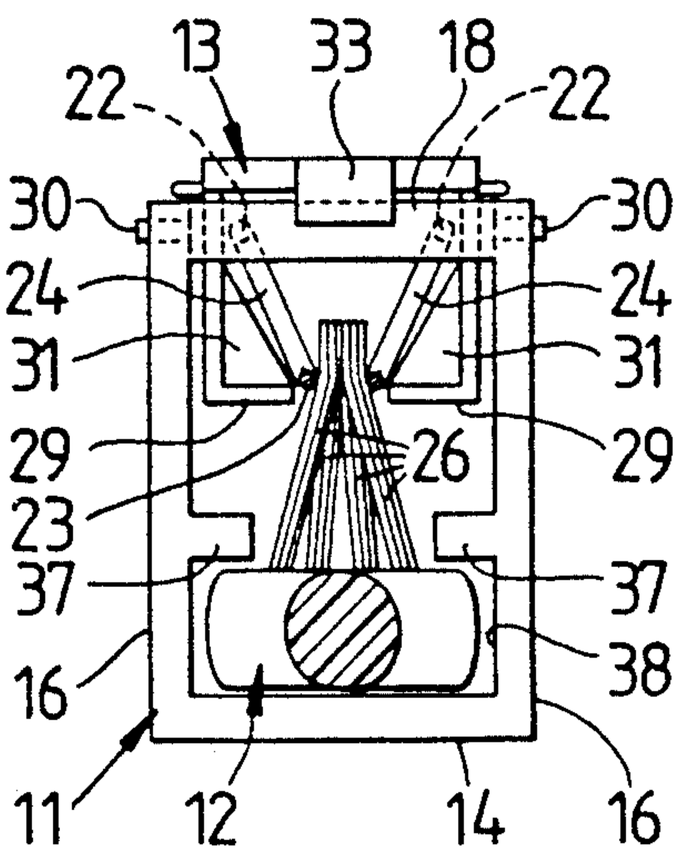


FIG. 5

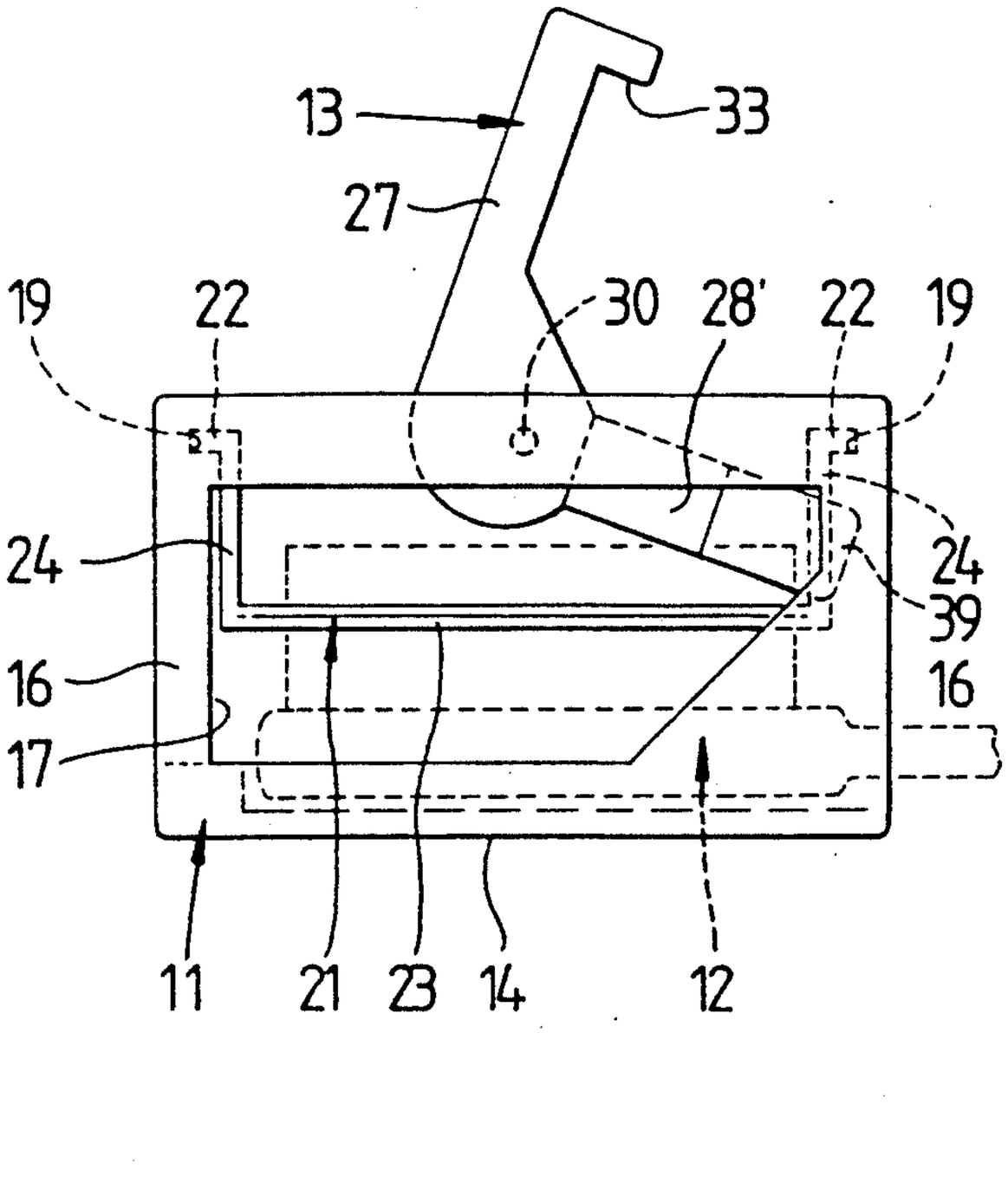
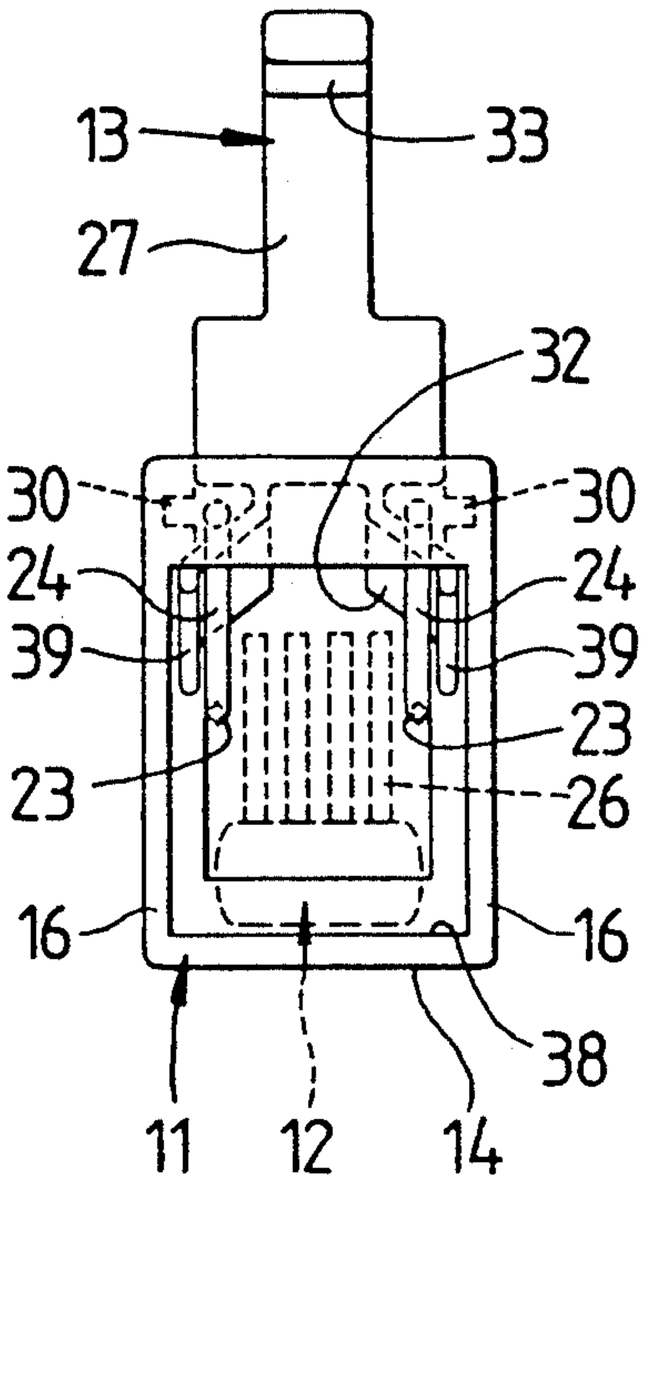


FIG. 6



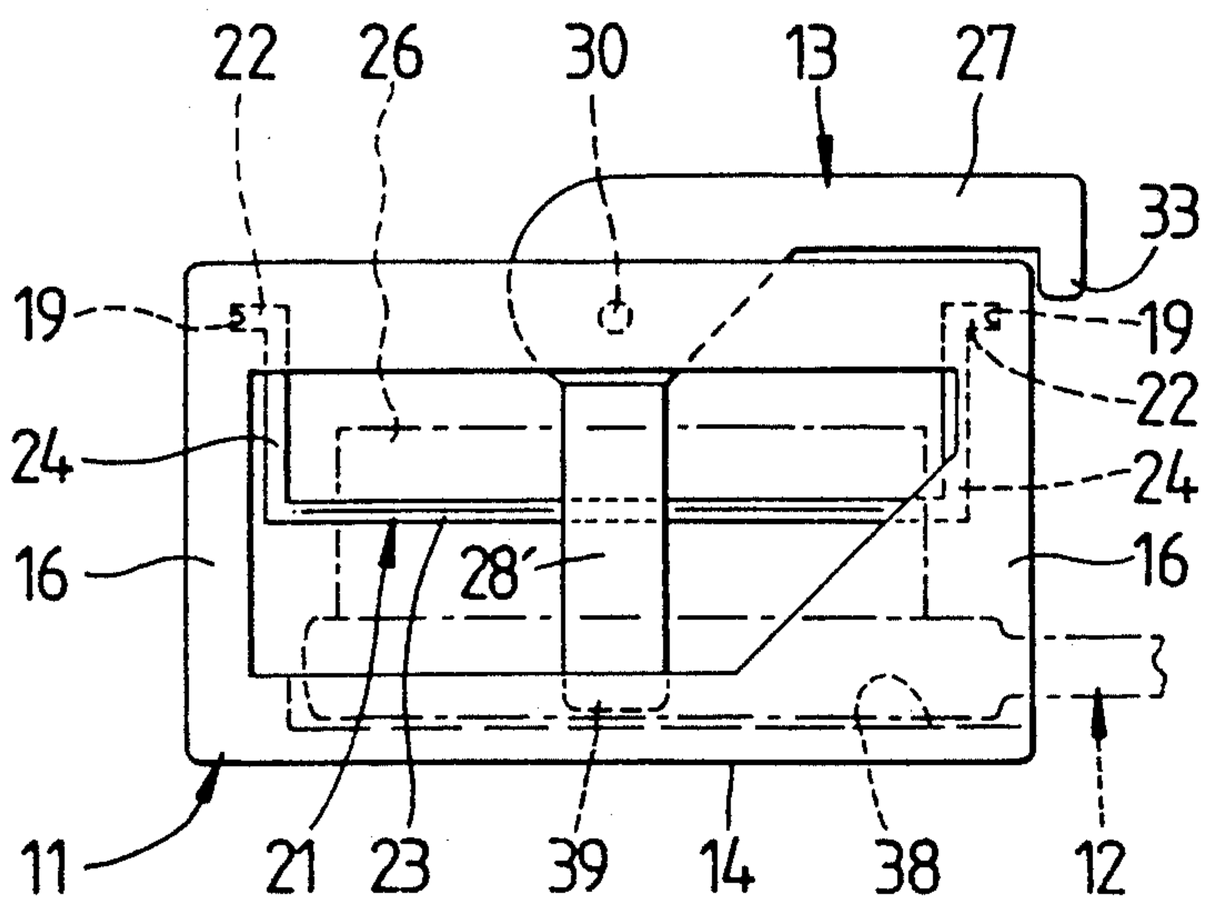


FIG. 7

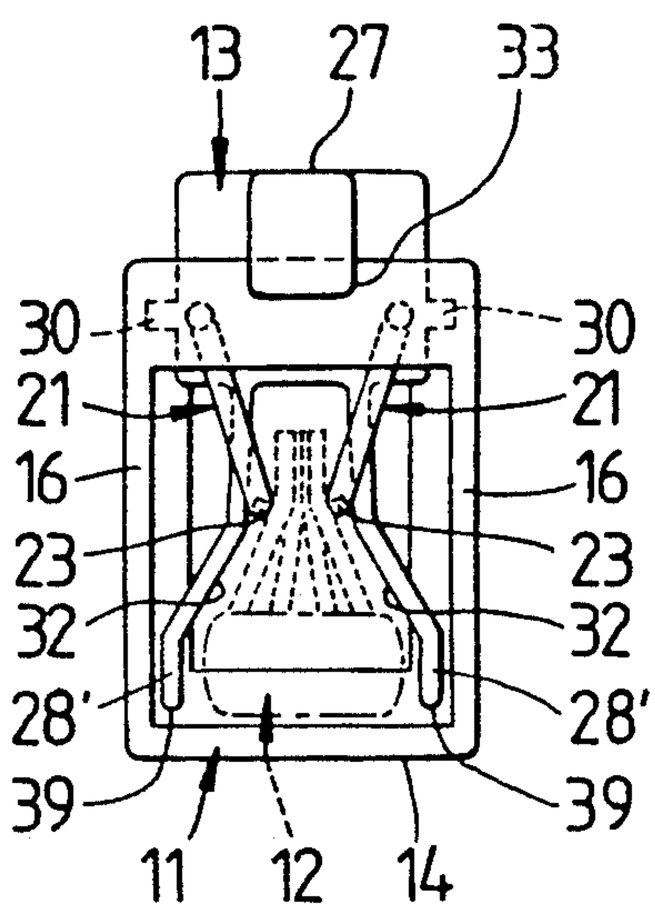


FIG. 8

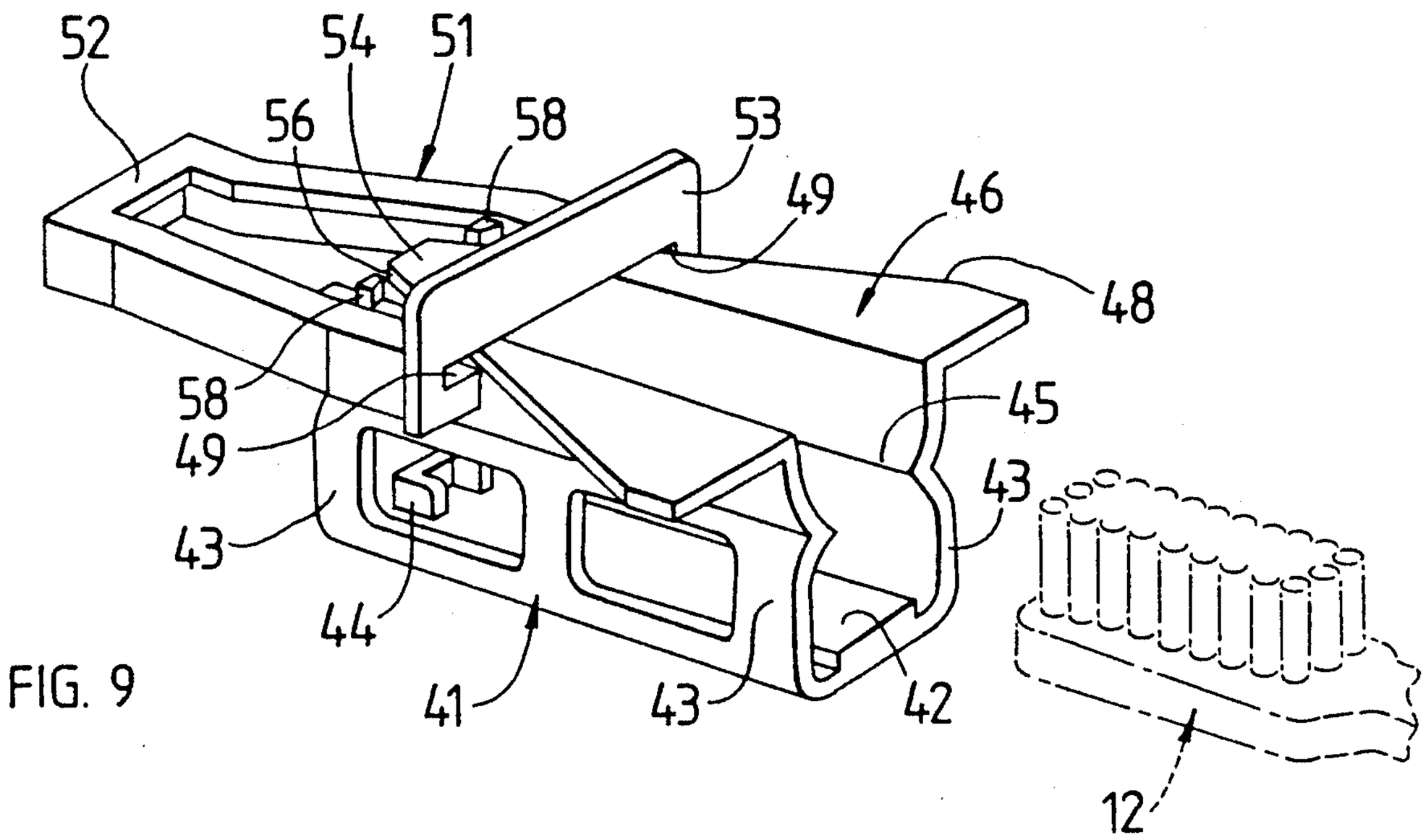

52
54
51
56
58
53
49
46
48
58
49
45
43
43
44
41
43
42
12

FIG. 9

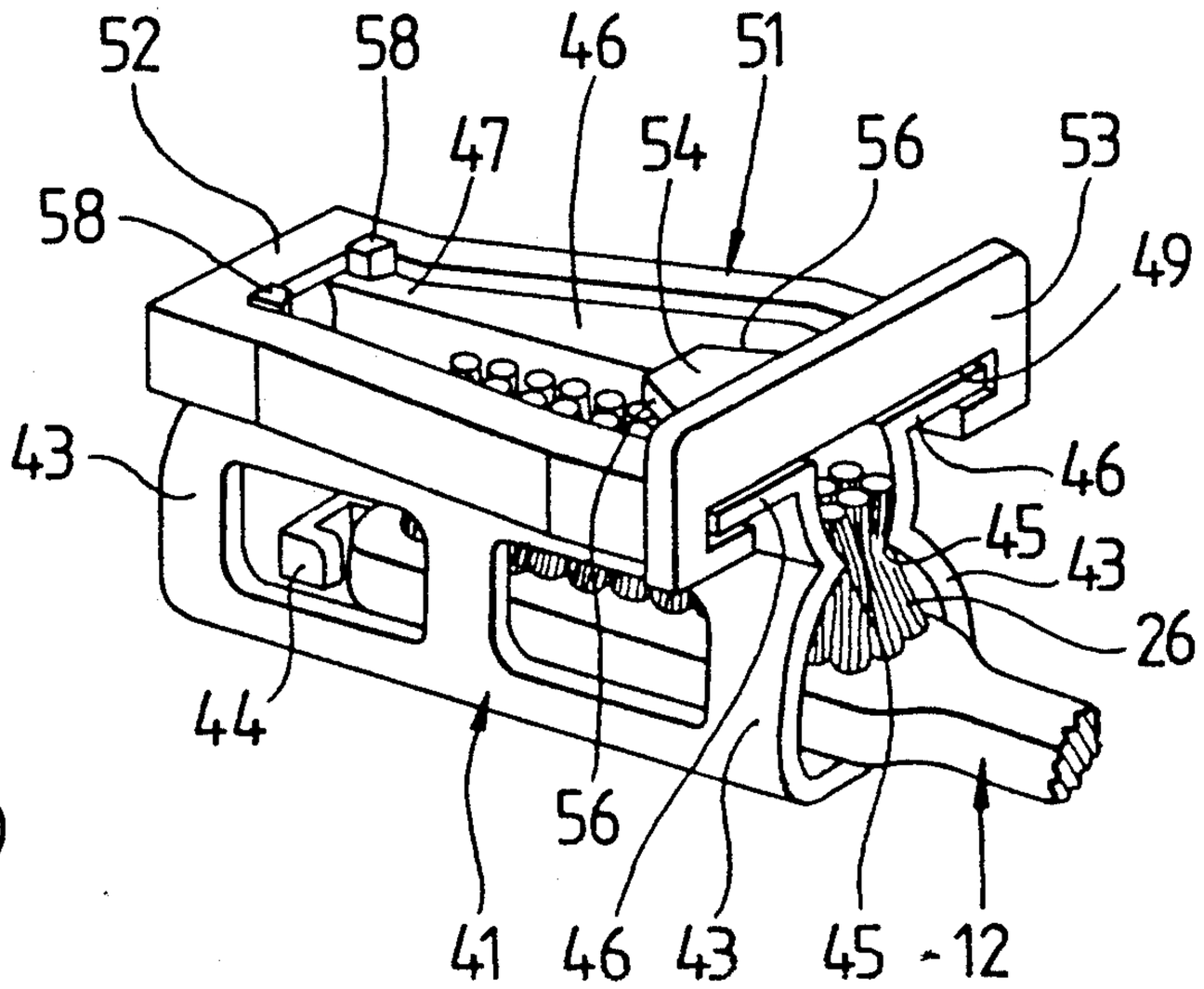

52
58
46
51
47
54
56
53
58
49
43
46
45
43
26
44
56
41
46
43
45
12

FIG. 10

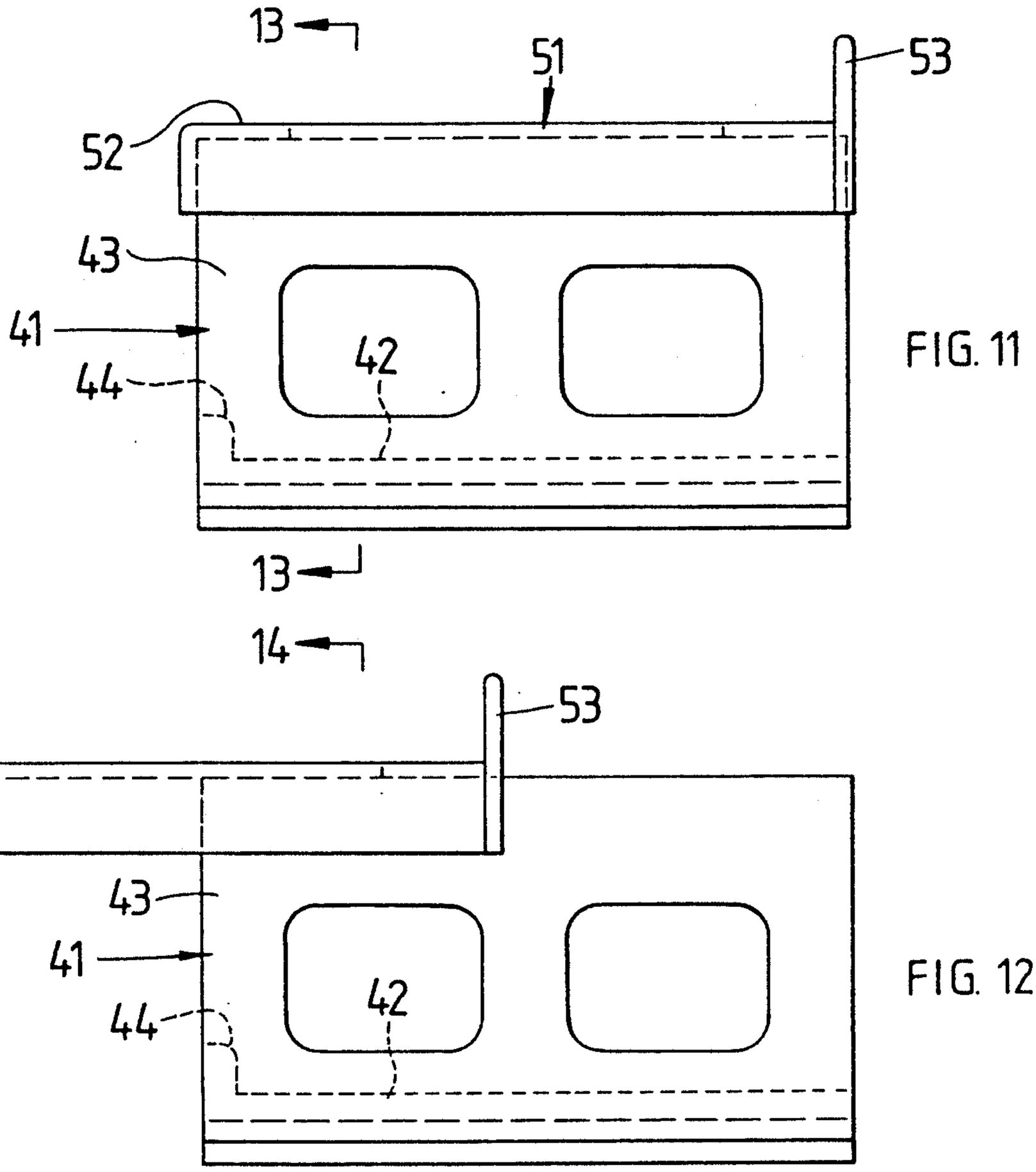


FIG. 11

FIG. 12

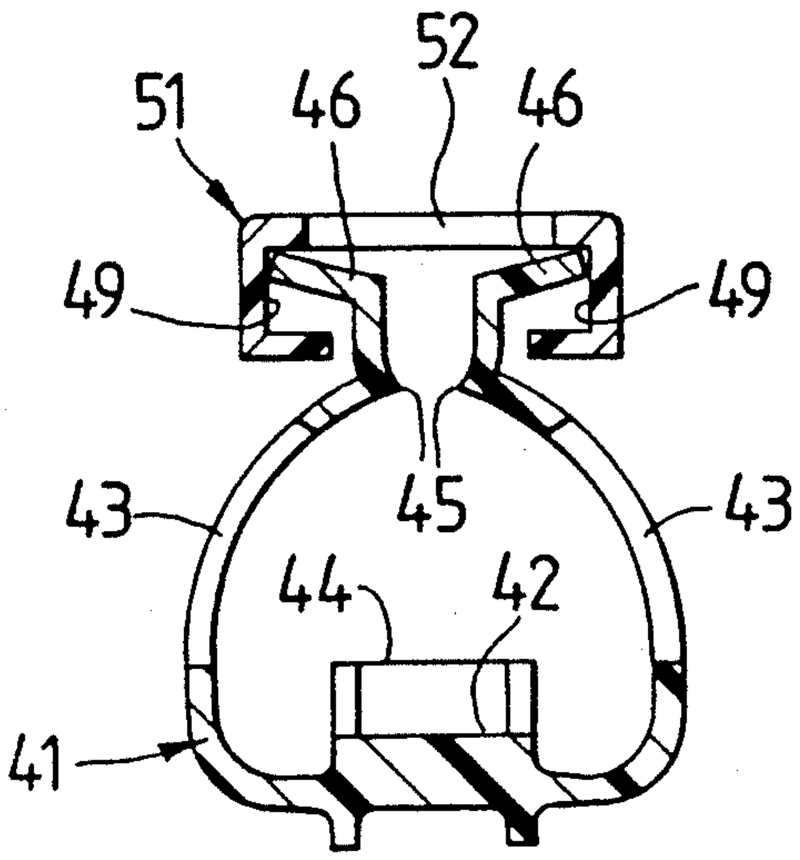


FIG. 13

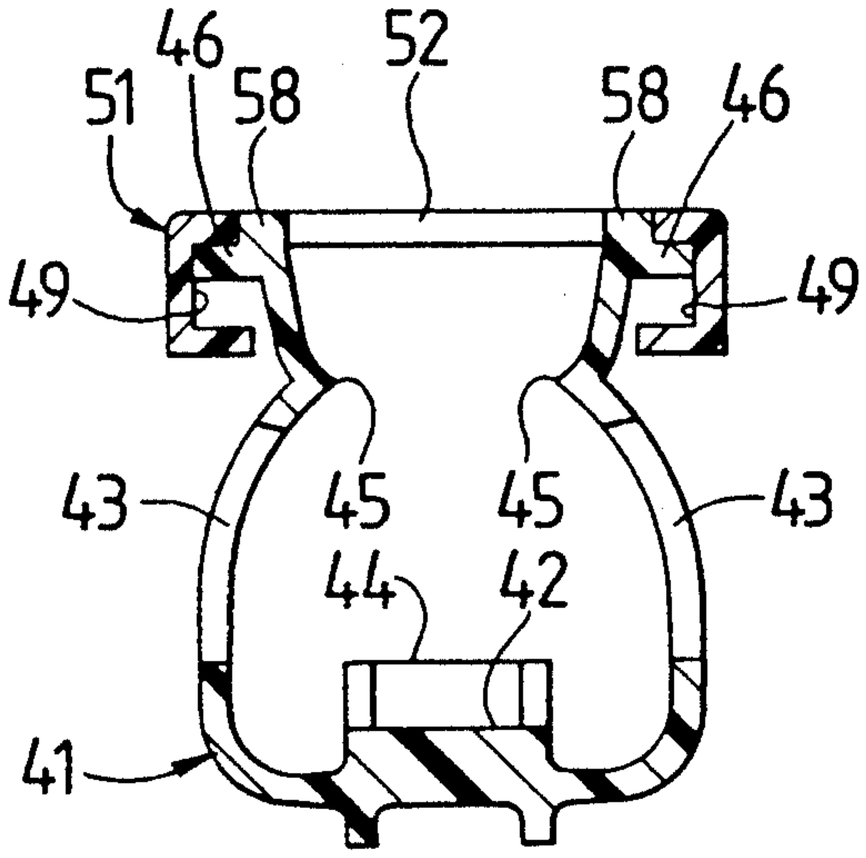
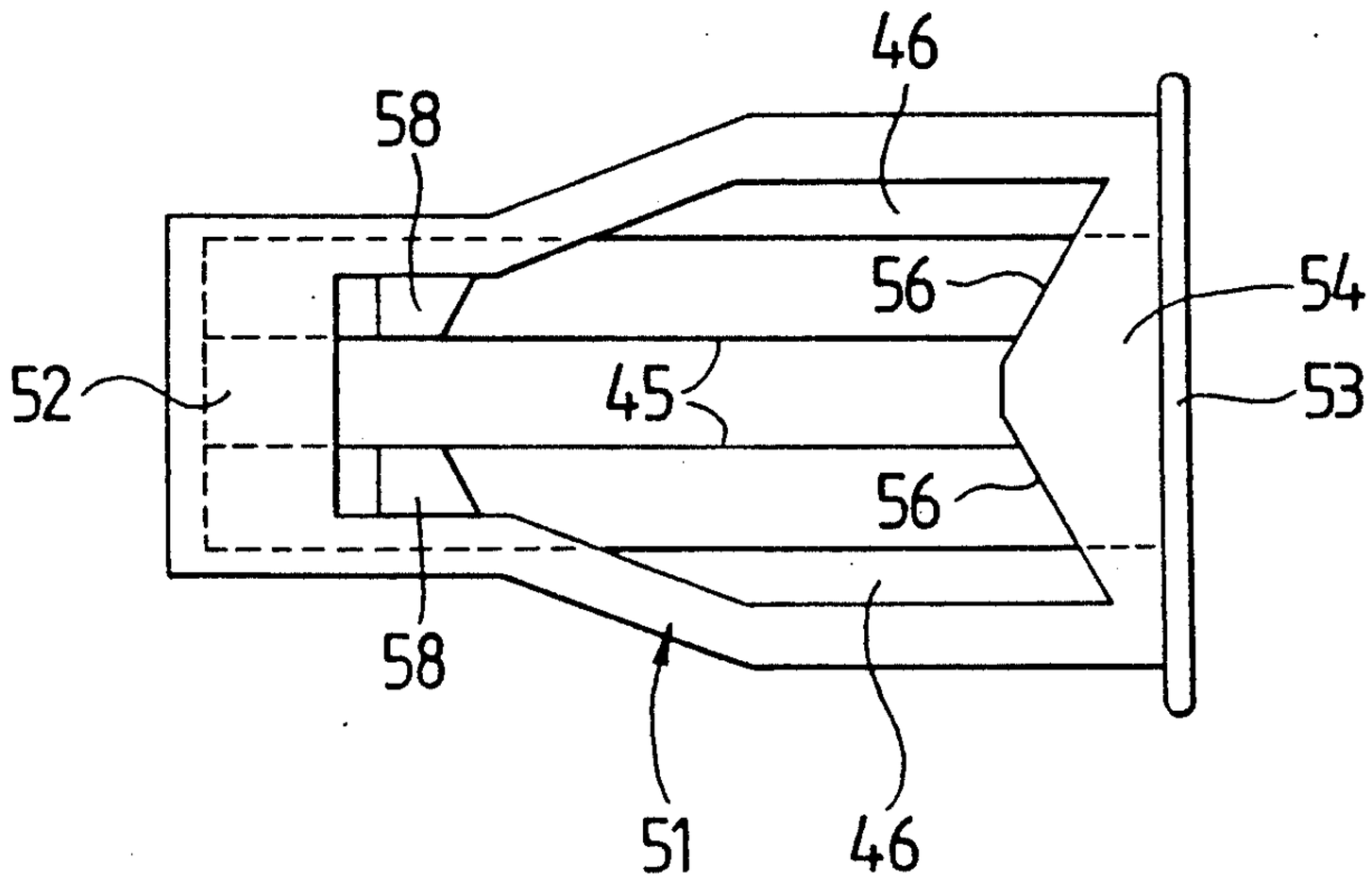


FIG. 14

FIG. 15


46
58
56
54
52
45
53
56
58
51
46

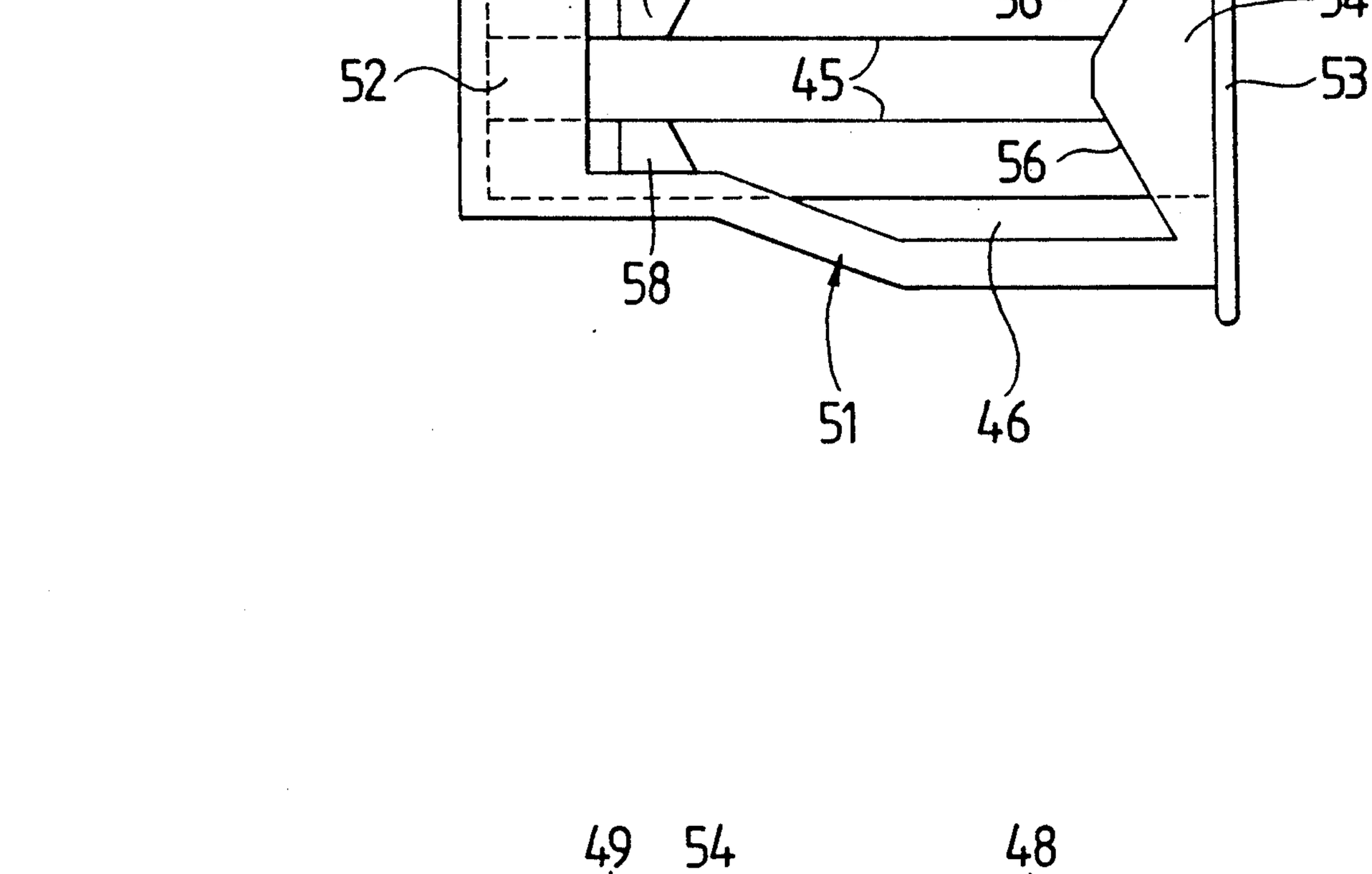

49
54
48
51
47
58
47
46
45
41
52
45
56
53
42
45
47
58
46
48

FIG. 16

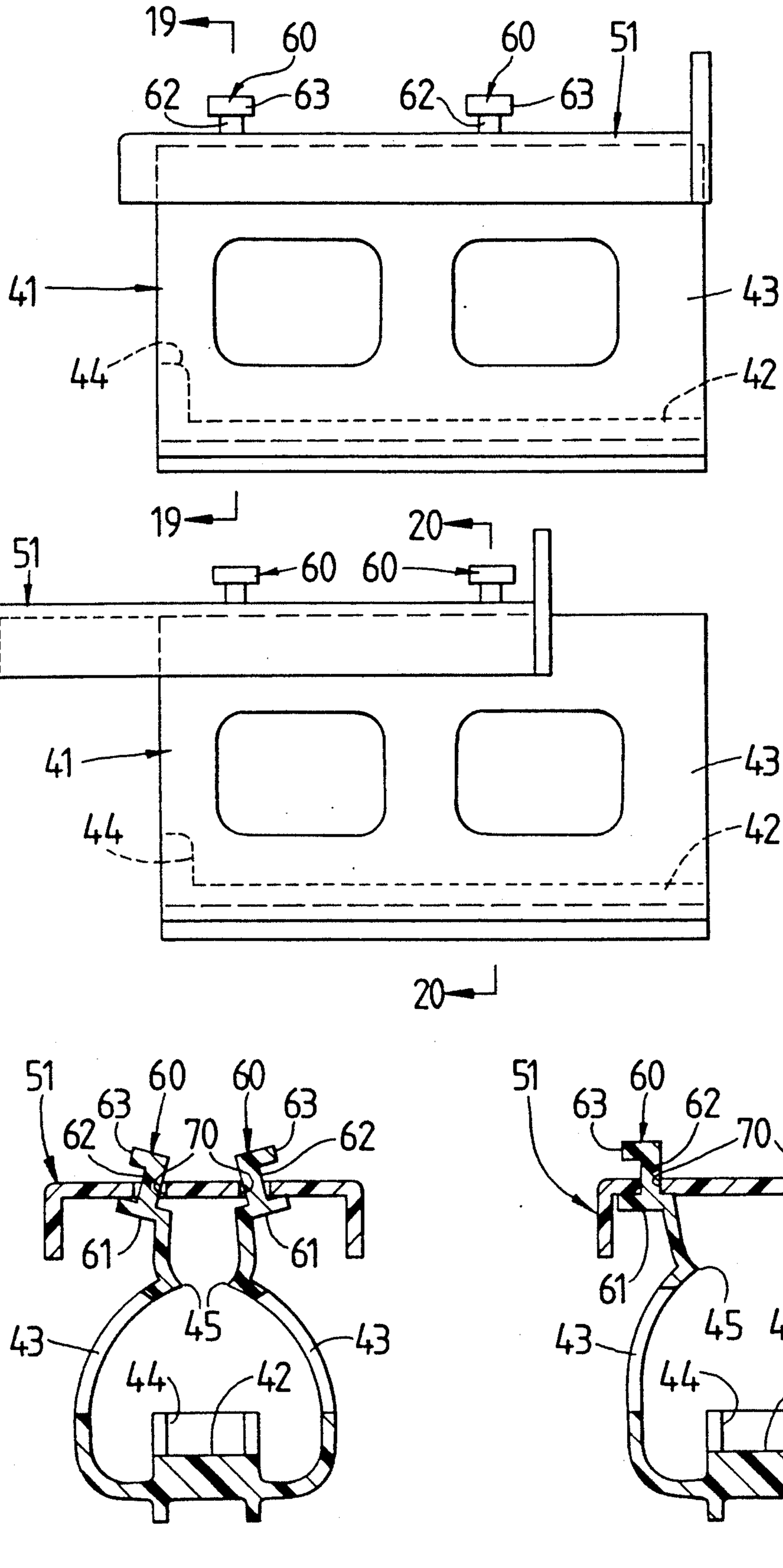


FIG. 17

FIG. 18

FIG. 19

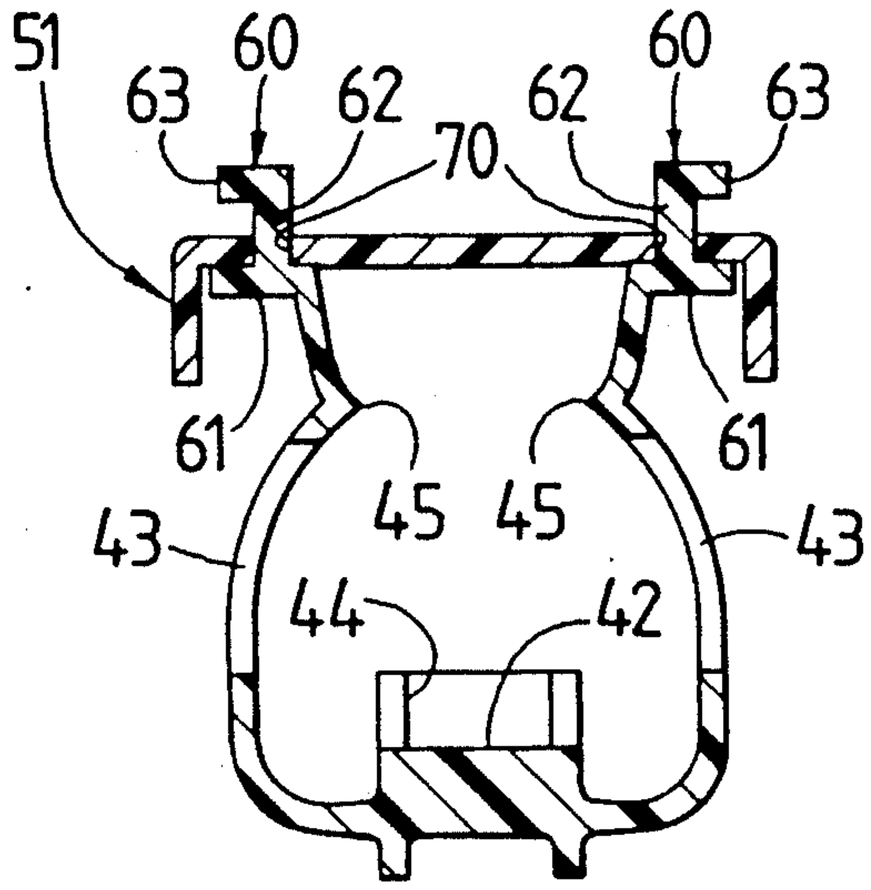


FIG. 20

FIG. 21

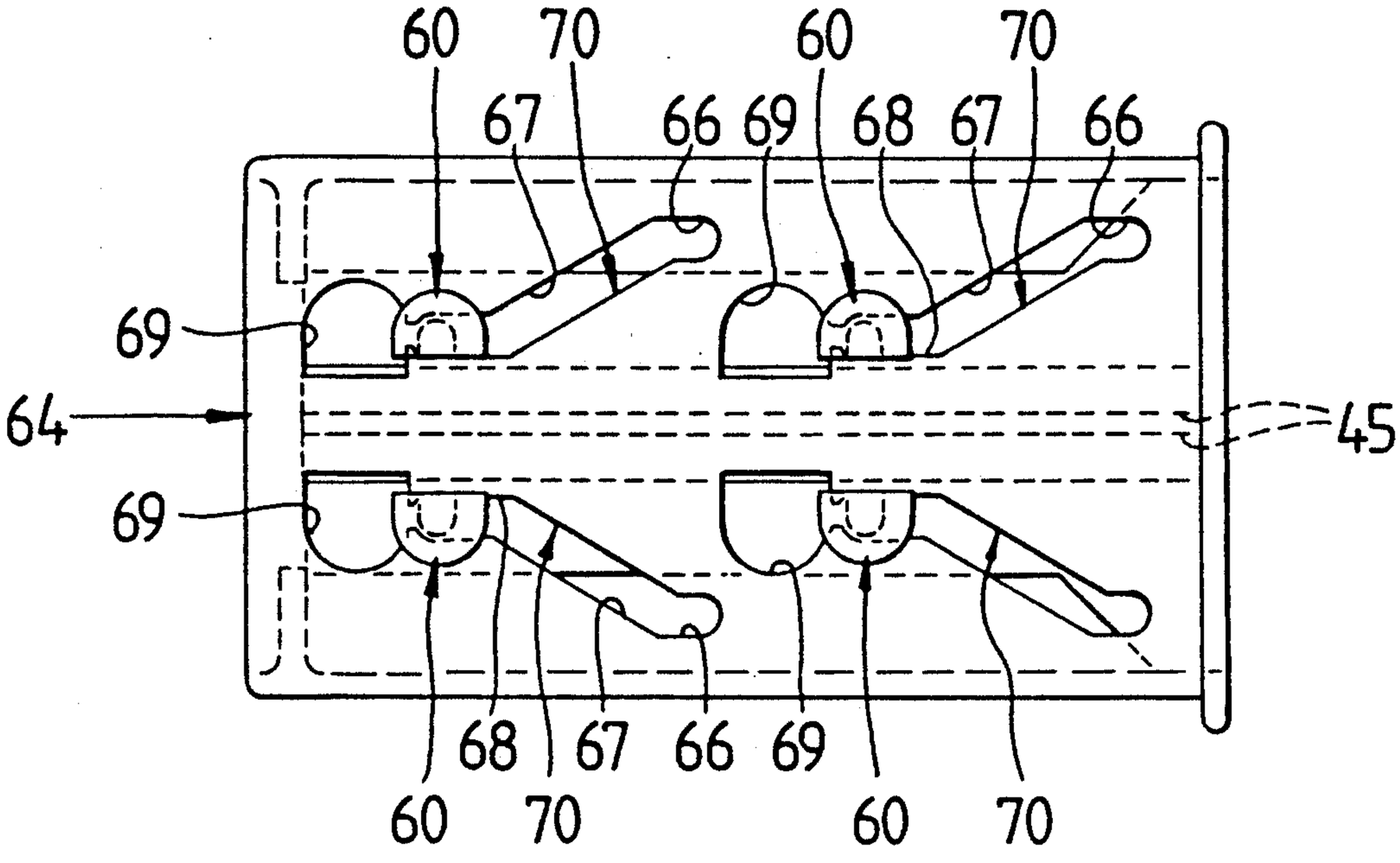

60
70
60
70
67
66
69
68
67
66
69
64
45
69
68
67
66
69
60
70
60
70

FIG. 22

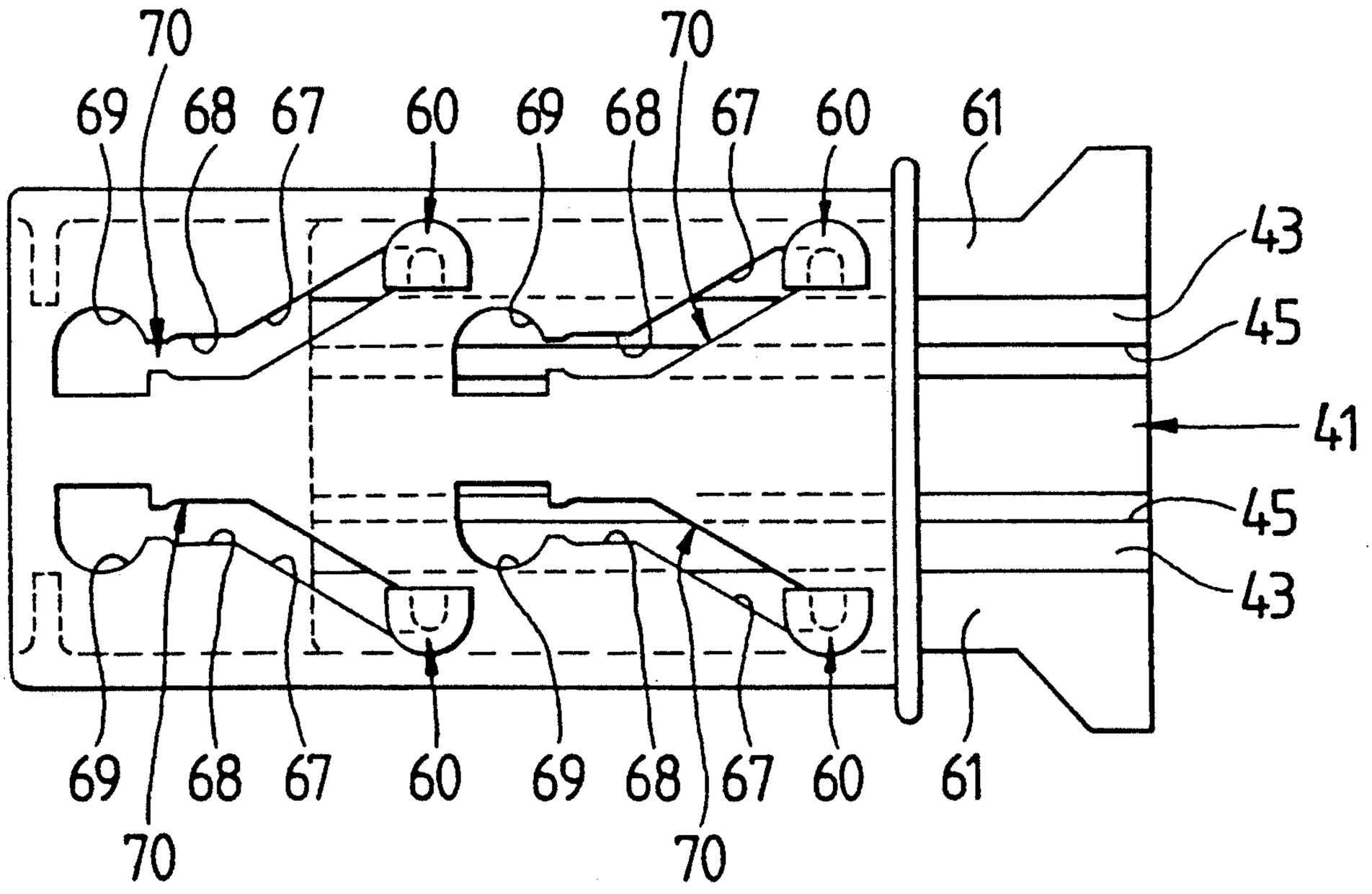

70
70
69
68
67
60
69
68
67
60
61
43
45
41
45
43
69
68
67
60
69
68
67
60
61
70
70

FIG 23a

FIG. 23b

FIG. 23c

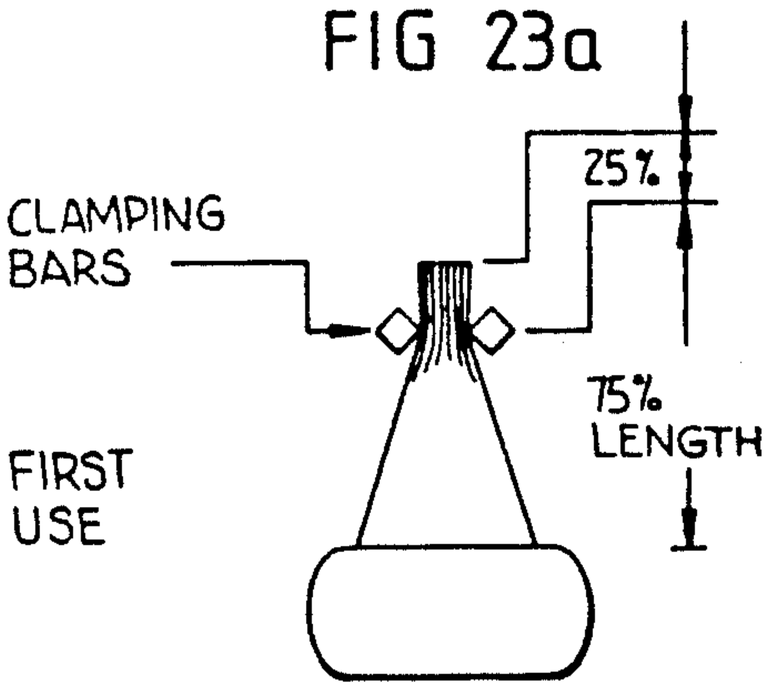


FIG. 24a

FIG. 24b

FIG. 24c

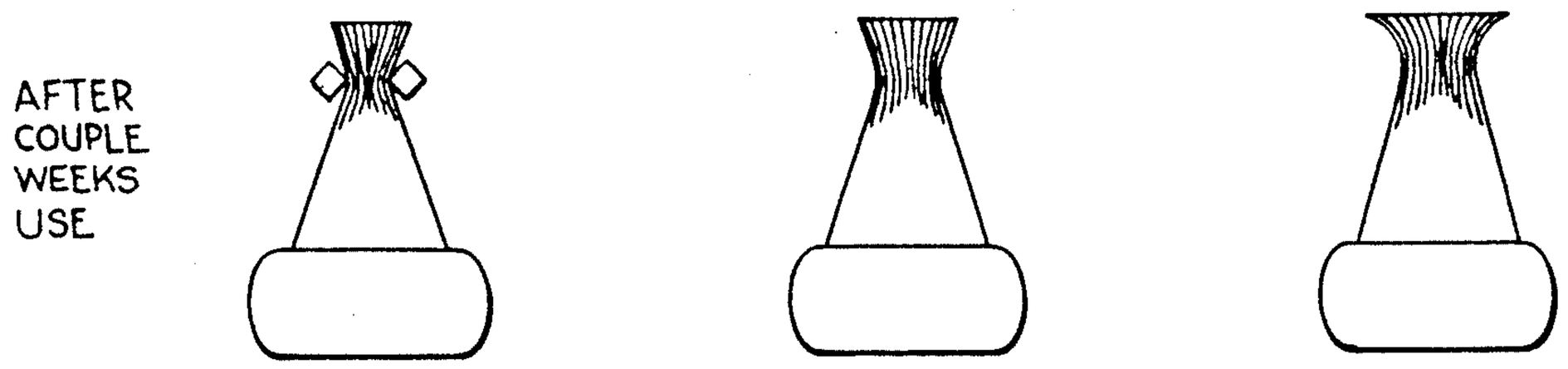


FIG. 25a

FIG. 25b

FIG. 25c

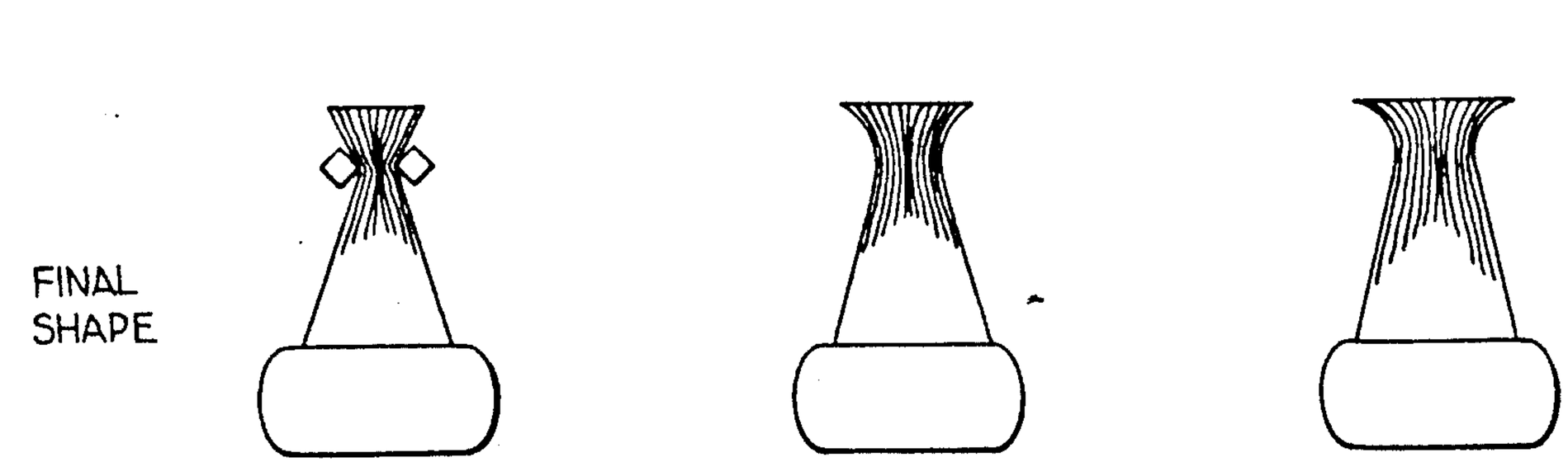
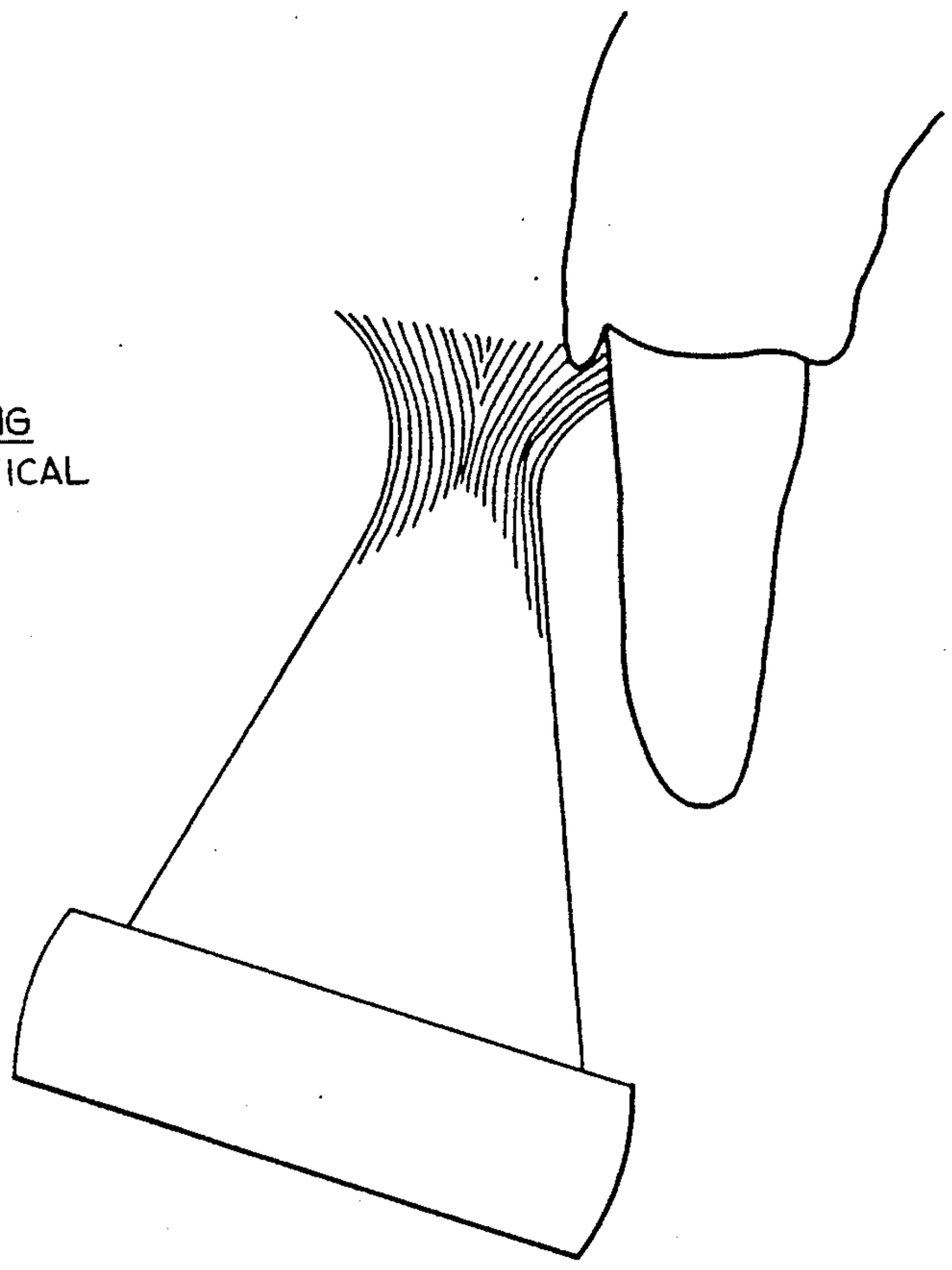
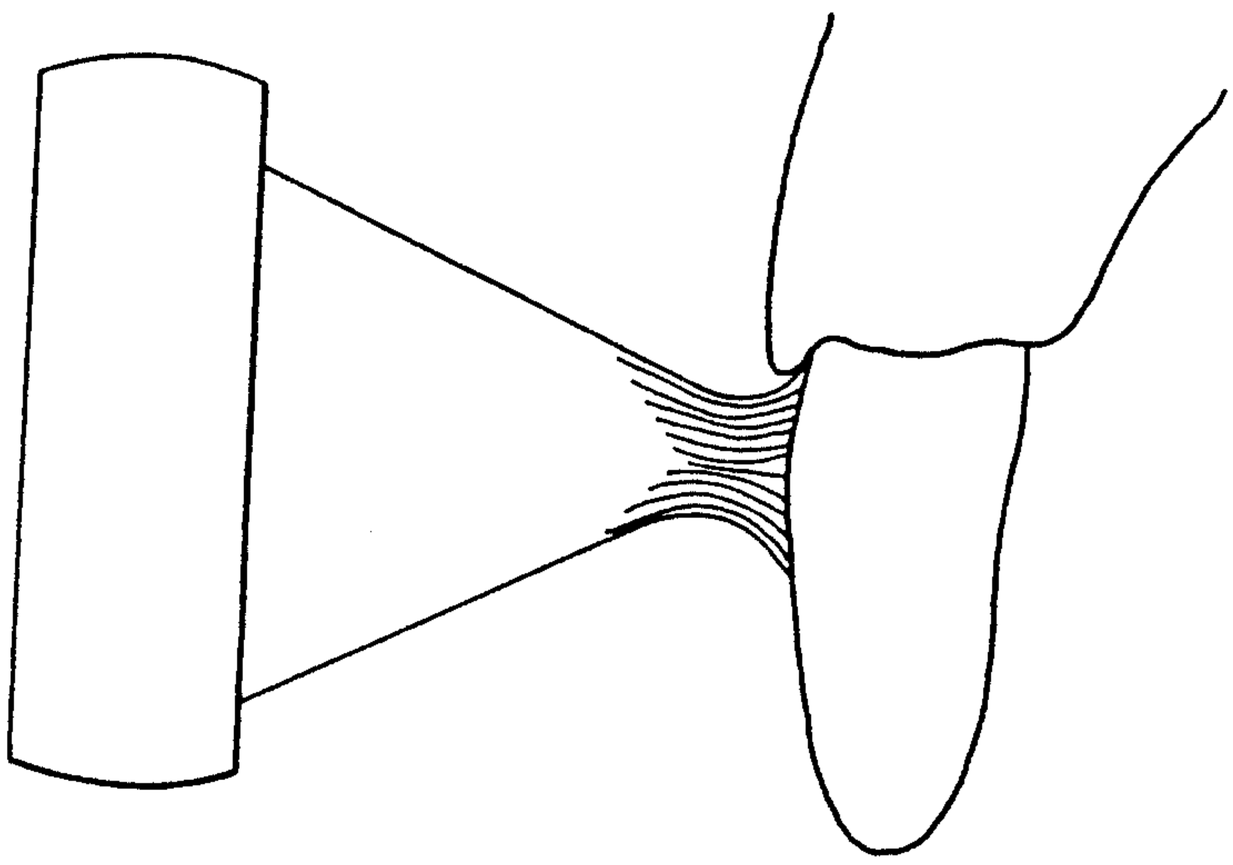


FIG. 26



EDGE BRUSHING
BRUSH IN VERTICAL ORIENTATION

FIG. 27



FLARE BRUSHING
BRUSH IN HORIZONTAL ORIENTATION

TOOTHBRUSH BRISTLE CLAMP

This is a continuation-in-part of application Ser. No. 07/199,373, filed May 27, 1988, Pat. No. 4,884,311.

BACKGROUND OF THE INVENTION

In the field of dental hygiene, it is known that it is advantageous to use a soft-bristle toothbrush for regular home-cleaning regimens. This is particularly true, from the specialized view of the field of periodontistry. That area of dentistry is principally concerned with the physiology and pathology of the gums and other "soft-tissue" of the tooth-bearing region of the mouth, vis-a-vis the teeth themselves and their associated skeletal regions. More particularly, periodontistry is directed toward preventing and correcting the diverse effects of plaque-causing bacteria in the gingival sulcus area under the gum flap which covers the base of the teeth.

In the daily home-practice of oral hygiene, periodontists strongly favor the use of toothbrushes having soft bristles. The reasons for this are to provide a brush which is sufficiently flexible to massage thoroughly the soft tissues of the mouth, to stimulate blood circulation, and to disorganize bacteria; all without causing undue trauma to the oral tissues. Further, the straight bristles normally used in a conventional brush, are not effective to scour comfortably under the gum flap.

Currently, the bristles in toothbrushes are almost always made from thermo-plastic materials. Inherently, these are easily deformed. Soft bristles, being inherently even more supple and susceptible to bending than "hard" bristles which are thicker and/or made from material which is more rigid structurally, are not useful for any reasonable period of time in the manner which periodontists particularly seek. Such bristles individually spread and bend over and become fixed more or less permanently in a multitude of directions, rather than staying aligned, more or less. Thus, the bristles do not present a coordinated mass of soft bristles to the brushed area. This can render the brush unusable, particularly over any considerable length of time, and even hazardous to the soft tissues in the mouth.

The long, soft, bristles in the presently available designs are, inherently, individually, structurally weak, and readily collapse under pressure. For this reason, brushes are made available in the "medium" and "hard" bristle types so they will stand up better under the pressure of brushing. Yet these are counter-productive because the stiffer bristles have a greater tendency to injure the soft tissues. This tendency to injury increases as the bristles spread with use.

From the foregoing, it may be seen that:

All present brushes become permanently deformed with use and increasingly become unsatisfactory for use.

The basic shape of the present bristle design does not lend itself to reaching the vital sulcus area under the gum flaps.

The soft bristles rapidly become deformed with repeated use and do not present a resilient coordinated mass of soft bristles for brushing action.

The "medium" and "hard" brushes provide increased resilience, when new, but soon take a self-defeating spreading set.

Further, it is the natural characteristic of wet thermoplastic and other types of bristles to take a permanent "set" when repeatedly forced into disarray by the brushing action. As is well known, this disarray becomes a permanent shape of the brush, and thereby renders it hazardous to use. However, this characteristic of taking a "set" while wet can be controlled, and the resulting, permanent shape can be trained into an improved and highly advantageous arrangement by the use of a training clamp.

Further, because the bristles are soft, they will be bent into undesirable disarray if they are forced into a permanently arranged spring clamp. The clamp must be removably affixed so that it may be repeatedly applied and re-applied without disturbing the bristles into a non-perpendicular disarray and causing them to take the wrong "set".

All of the above establishes a need to form the bristles of a soft bristle toothbrush in a manner to substantially increase the effective resilience of the soft bristles, to eliminate the need for the "medium" and "hard" brushes; and to at the same time, produce a maintainable, coordinated mass of soft bristles, so formed that the sulcus area is properly addressed, and all surfaces are comfortably and effectively scoured.

A variety of proposals have been made for straightening brush bristles after use. Some of them contemplate pressing to a limited degree on the free ends of the outer bristles so as to cause them to deflect inwards, so as to make the group of bristles form a uniform mass without edge fraying. In this connection, reference is made U.S. Pat. Nos. 271,814; No. 637,522; No. 1,444,677; No. 3,120,019; and No. 3,995,743. However, even these prior art teachings do not produce results desired by periodontists and other such specialists in oral hygiene since, even when practiced with soft bristle brushes, the effect at best is merely to reduce edge-fraying. Consequently, the prior art devices provide no greater remedial effect than is available in any soft toothbrush, even when brand new and unfrayed.

Accordingly, it is the object of this invention to provide a means whereby the natural weakness of the wet, soft, bristles to splay out with use can be controlled, and the wet bristles trained to deform in an advantageous shape. The repeated act of clamping the wet brush tightly in the approximate 70% of length area while it is not in use, together with the splaying effect of the brushing action, gradually produces a brushing "flare" of soft bristles, supported by a structural wedge of soft bristles. The wet condition, the tight clamping and the bending effect of the brushing action are all three essential to the forming of the structurally supported flare.

Accordingly, it is an object of this invention to provide a means for forming soft bristles into close juxtaposition in a unique, crucial region proximal their free ends with the free ends of said bristles flared outward with respect to the region in which they are closely juxtaposed.

Still another object of this invention is to enhance the resiliency of the tooth-contacting portion of the bristles by shape and juxtaposition.

Another object is to provide a means for compressing a toothbrush such that the bristles are bent at a crucial point, and the ends are trained into a coordinated flare of soft bristles by the repeated action of brushing and clamping when wet.

Still another object of this invention is to provide a means to attain a thin resilient edge of soft bristles along the edge of the flare. Brushing with the flare against its new, assumed shape, provides a soft, resilient, thin mass of bristles that comfortably scours beneath the gum

flaps. This "brushing edge" is a new concept and provides advantages not otherwise attainable.

Another object of this invention is to provide a means to reform the bristles of a toothbrush after each use into a unique coordinated mass of soft bristles.

Another object of this invention is to form the bristles of the toothbrush such that the free ends of said bristles above a crucial pressure area will be flared outward, by repeated brushing action, with respect to the lower region in which they are closely juxtaposed.

Another object of the invention is to provide a means for forming the bristles of a toothbrush in which the lower portion of bristles below a crucial bending and pressure area are formed into a wedge-like shape which converges at the pressure point.

Another object of this invention is to identify the location of the crucial pressure area in relation to the length of the bristles, above which point the flare and supporting wedge are not formed, and below which crucial area the application of a line of compression causes the bent bristles to splay outward instead of bending inward on themselves.

Another object of the invention is to establish the bristles of a dental appliance into a shape that effectively eliminates the need for a "medium" or "hard" brush.

Still another object of this invention is to provide such apparatus in a form which is removably affixable after each use.

Another object is to apply all of the above to the training of any soft bristle brush whereby an upper, flared, coordinated mass of brush ends is supported by a trained, wedge-like, formation of the coordinated lower mass of bristles so that brushing pressure causes the lower portion of the bristles to bend inward towards each other to gain increased resilient support, rather than to splay outward in individual weakness as in present cases.

SUMMARY OF THE INVENTION

The desired objects may be achieved using my invention which comprises a removable receptacle for the insertion of an ordinary soft bristle toothbrush with the receptacle having a compression means extending longitudinally thereof such that the bristles of the brush are received therebetween without distorting their vertical parallel relationship. A camming action urges the compression members inwardly against the bristles at a preselected height such that the lower portion of the bristles are formed into a wedge-shaped mass, while the bristle ends remain free to flare outwardly above the compression members.

BRIEF DESCRIPTION OF THE DRAWINGS

Apparatus embodying features of my invention are depicted in the accompanying drawings, which form a portion of this disclosure and wherein:

FIG. **1** is a side elevational view showing the closure members in an open position;

FIG. **2** is an end view of the apparatus of FIG. **1** with a toothbrush inserted;

FIG. **3** is a side elevational view of the apparatus closed;

FIG. **4** is an end view of the apparatus as in FIG. **3** with a toothbrush inserted;

FIG. **5** is side elevational view of a second embodiment of the invention;

FIG. **6** is an end elevational view of a second embodiment of the invention;

FIG. **7** is a side elevational view of the second embodiment of the invention in the clamped position;

FIG. **8** is an end view of the second embodiment of the invention in a bristle clamped position;

FIG. **9** is an isometric view of a third embodiment of the invention while in an open position;

FIG. **10** is an isometric view of a third embodiment of the invention while in a clasped position;

FIG. **11** is a side view of a third embodiment of the invention while in a clasped position;

FIG. **12** is a side view of a third embodiment of the invention while in an open position;

FIG. **13** is a sectional view taken along line **13—13** of FIG. **11**;

FIG. **14** is a sectional view taken along line **14—14** of FIG. **12**;

FIG. **15** is a plan view of a third embodiment of the invention in a clasped position;

FIG. **16** is a plan view of a third embodiment of the invention in an open position;

FIG. **17** is a side view of a fourth embodiment of the invention in a clasped position;

FIG. **18** is a side view of a fourth embodiment of the invention in an open position;

FIG. **19** is a sectional view taken along line **19—19** of FIG. **17**;

FIG. **20** is a sectional view taken along line **20—20** of FIG. **18**;

FIG. **21** is a plan view of a fourth embodiment of the invention in a clasped position;

FIG. **22** is a plan view of a fourth embodiment of the invention in an open position;

FIGS. **23***a*–**25***c* are pictorial illustrations of a toothbrush showing the effects of using the invention on toothbrush bristles in relation to time;

FIG. **26** is a pictorial illustration of a toothbrush engaging the sulcus region of a tooth being positioned vertically in relation to the tooth, illustrating an edge brushing technique; and

FIG. **27** is a pictorial illustration of a toothbrush engaging the sulcus region of a tooth positioned approximately 90 degrees from the position depicted in FIG. **26**, illustrating a flare brushing technique.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring to the drawings for a clearer understanding of the invention and further referring to my co-pending U.S. Pat. application Ser. No. 199,373 which is hereby incorporated by reference, it may be seen that I have provided in the instant apparatus a device which is useful with a wider range of brush sizes to achieve the result of proper brush formation and maintenance.

As may be seen in FIGS. **1** & **2**, my apparatus includes a lower portion **11** which serves as a receptacle for a toothbrush **12** and a movable portion **13** pivotally mounted to the receptacle **11** at the top thereof. The receptacle, which is preferentially made from a strong molded plastic, has a bottom **14** and a pair of spaced apart sidewalls **16**. The sidewalls may be windowed as at **17** on their upper portion or may be solid. One end of the receptacle **11** is open to permit insertion of the toothbrush **12** and the other end is preferentially partially closed. The open end or ends of the receptacle are spanned by a brace **18** connected at each end to the tops of sidewall **16**. Each brace has a pair of recesses **19**

therein spaced inwardly from said sidewalls **16**. An elongated rigid compression member **21**, such as a suitably stiff wire or molded plastic, has each end thereof inserted into one of the recesses **19** such that a pair of compression members **21** are permitted to swing free, but are pivotally supported in longitudinal alignment within the receptacle **11**. The compression members **21** each include rounded end portions **22** for insertion into the recesses **19** and a central portion **23** extending substantially the length of the interior of the receptacle **11** with the central portion **23** connected to the end portions **22** by an angled portion **24** such that rotation of the compression members about the axis of the end portion **22** moves the central portion **23** through an arc about the axis. Thus the central portion **23** of the compression members **21** are parallel to each other and are suspended on either side of the bristles **26** of toothbrush **12** when properly inserted into the receptacle **11**. The height of the central portion **23** is important in proper bristle formation, therefore the compression members **21** may be formed for proper use with a brush of commensurate bristle length, i.e. short, medium or long.

Movable portion **13** controls the spacing between the central portion **23** of the compression member **21**, and includes a handle portion **27** and a jaw portion **28**. The jaw portion **28** has a pair of spaced apart jaw members **29** which are semi-circular in shape and extend radially from the axis of rotation **30** of the movable portion **13** and between the adjacent sidewall **16** and compression member **21**. Each jaw member has formed on the circumference thereof a wedge-like cam **31** which extends laterally toward the center of the receptacle **11** forming a ramp-like surface **32** which abuts the central portion **23** of the adjacent compression member **21**. The handle portion **27** is rigidly attached to the jaw portion **28** for concomitant rotation about the axis of rotation **30**. A tab member **33** is formed on the end of handle **27** and positioned to engage the brace **18** to releasably lock the movable portion thereto.

In operation, the handle portion is moved to a fully open position, whereat an interface knob **35** abuts the top of the sidewall **16**. In this position the compression members **21** abut the ramp surfaces **32** at the widest separation therebetween. A toothbrush **12** is then inserted into the receptacle **11** with the bristles centered between the free swinging compression members and at a relative height thereto to facilitate proper wedge formation. It may be desirable to form a pair of stops **37** on the inner surfaces of sidewalls **16** to provide a chamber for the brush handle and a guide slot **38** for the bristles to insure proper placement of the bristles relative to the compression members **21**. With the brush **12** properly positioned, the handle **27** is moved to the closed position, thereby causing the ramp surfaces **32** to engage the closure members **21** in even narrower separation, which in turn clamps the bristles of the brush between the central portion **23** along a line defined thereby such that the portion of the bristles below the line form a coherent wedge shape and the bristle portion above the line is flared outwardly from the line of applied pressure. The tab member **33** contacts the edge of brace **18** in a close fitting manner to releasably lock the handle **27** to the brace **18**.

A second embodiment of the invention is shown in FIGS. **5–8** wherein the lower portion **11** is the same as shown in the preceding FIGS. However the stops **37** have been removed from the inner surfaces of the sidewalls **16**. In this embodiment the movable portion **13** is modified, in that the jaw **28** is no longer an arcuate member but rather extends at approximately 90 degrees from the handle member **27** which remains unchanged. As may be seen most clearly in FIGS. **7** and **9**, the modified jaw member **28'** is integrally formed with the handle member and is spaced apart at the junction with the handle member to form a narrow channel for receiving the bristles **26** therein. The modified jaw **28'** then flares outwardly distal the handle member, uniformly to each side, and terminates in a portion **39** which is substantially parallel to the inner surfaces of the sidewalls **16** and slidingly abuts the sidewalls **16**. The terminal portion **39** is sufficiently wide to receive the handle portion of the toothbrush as shown in FIG. **8**. The pivotally mounted compression members **21** are positioned with their central portions **23** inwardly of the end portions **39** of the modified jaw member **28'**. Thus, as the jaw member is rotated from a position perpendicular to the bristles as shown in FIG. **5** to a position parallel to the orientation of the bristles as shown in FIGS. **7** and **8**, the ever-narrowing taper of the jaw member **28'** forces the compression members **21** inwardly against the bristles resulting in the deformation of the bristles as shown in FIG. **8** which corresponds to the deformation of the preceding embodiment as shown in FIG. **4**.

A third embodiment of the invention (somewhat modified from the previous embodiments) is shown in FIGS. **9–16**. A sliding bottom receptacle **41** contains a raised base **42** which extends the length of the bottom **41** and a pair of sidewalls **43** windowed to create greater flexibility. An endstop **44** is located on the raised base **42** opposite the open end of the receptacle **41** to insure proper placement of the bristles relative to the receptacle **11**. As the sidewalls **43** extend upward, they curve inwardly and then outwardly in relation to the longitudinal axis of the receptacle **41**, thereby forming a clasping edge **45** (see FIG. **14**), which extends the longitudinal distance of the sidewalls **41**.

A pair of clasping wings **46** extend forwardly and outwardly from the outside surface of each sidewall **43**, being integrally attached and extending from the upper edge of the sidewall **43**. The clasping wings **46** form a planar surface perpendicularly extending from the sidewall **16**. Each of the wings **46** includes a generally rectangular forward portion **47** and an outwardly flaring rear portion **48** with the marginal edges of the clasping wings defining cam surfaces which engage the inner surfaces of a pair of compression tracks **49** included within a compression housing **51**.

The compression housing **51** surrounds, is connected to, and is linearly movable relative to the outer edges of the clasping wings **46**, as shown in FIGS. **9** and **10**. The compression housing **51** is preferably made from a strong molded plastic lacking the flexible characteristics of the receptacle's sidewalls **43**.

The compression housing **51** includes two elongated compression tracks **49**, which extend along the edge of the compression wings **46** when the receptacle **41** is inserted within the compression housing **51**. The compression tracks **49** are shaped to mirror the edges of the clasping wings **46**. The compression members are joined on one end by a closing brace **52** extending perpendicularly between the two compression tracks **49** at their closest juncture. The compression tracks **49** are joined at their end distal brace **52** by a C-shaped brace **53** which encloses the edge of the clasping wing **46** but allows relative linear movement of the compression

housing **51** along the clasping wing **46**. The compression tracks **49** extend from the inner face of the C-shaped brace **53** and mirror the shape and relative displacement of the marginal edges of the clasping wings **46**, thus, the compression tracks **49** converge from the C-shaped brace **53** to brace **52**. A stop plate **54** is located between the compression tracks **49** flush with the upper edge of the compression tracks **49** and extending from the C-shaped brace **53** and is defined by a pair of angled camming surfaces **56**.

The compression housing **51** operates in an open position as viewed in FIG. **9** and a clasping position as viewed in FIG. **10**. The compression housing **51** is placed in the open position by sliding the compression housing **51** toward the closed end of the receptacle **41** until the camming surfaces **56** come in contact with two trapezoidally shaped positioner pegs **58** located on the upper surface of the clasping wings **46**. The compression housing **51** is placed in the clamping position by sliding the compression housing **51** toward the open end of the receptacle **41** until the closing brace **52** contacts the positioner pegs **58**.

The third embodiment of the apparatus is operated by inserting a moistened toothbrush within the receptacle **41** in the open position, until the brush contacts the endstop **44**. The compression housing **51** is then urged to the clamping position. As the compression housing **51** moves relative to the outer edge of the clasping wings **46**, the clasping wings **46** are cammed inwardly by the compression tracks **49**. As the clasping wings **46** are cammed inward, the sidewalls **43** are also pressed inwardly urging the clasping edges **45** located on the sidewalls **43** against the bristles of the brush, resulting in the deformation of the bristles as shown in FIG. **10** which corresponds to the deformation of the preceding embodiments as shown in FIG. **4** and FIG. **8**.

A fourth embodiment of the invention is shown in FIGS. **17–22**. The receptacle **41** is basically the same as shown in FIGS. **9–16** of the third embodiment. The clasping wings **46**, as shown in FIG. **9**, have been replaced with four clamping pins **60**. As shown in FIGS. **17–20**, the clamping pins **60** are attached to a pair of support plates **61** which are attached to the upper edges of the sidewalls **43**, extending outward from the sidewall **43**.

A clamping pin **60** includes a guide pin **62** and a securing flange **63**. The guide pin **62** is attached to the upper surface of the support plate **61** and extends through guide slots **70** defined within the upper surface of a cam guide **64**. The securing flange **63** is formed atop the guide pin **62** and extends perpendicular thereto.

Two clamping pins **60** are positioned on each support plate **61** thereby slidably connecting the cam guide **64** to the receptacle **41**. Each guide slot **70** contains an entry portion **66**, a compressing portion **67** and a retaining portion **68**. As shown in FIG. **21**, the entry portions **66** of the guide slots **67** are spaced both laterally and linearly along the upper surface of the cam guide **64** such that the spacing between the clasping pins **60** corresponds to an open position of the receptacle **41**. As shown in FIG. **22**, the compressing portions **67** converge toward the longitudinal axis of the cam guide **64** creating camming surfaces which urge the clasping pins inwardly as the receptacle **41** is inserted within the cam guide **64**.

The retaining portions **68** are in communication with and extend rearwardly from the compressing portions **67**. The retaining portions **68** extend parallel to the longitudinal axis of the camming housing **64**. Each retaining portion **68** extends an equal, predetermined distance from the compressing portion **67** ending in an insert portal **69**. The insert portal **69** is an opening defined with the cam guide and being of similar shape and size as the outer perimeter of the securing flange **63**.

When the apparatus is in an open position, as shown in FIG. **22**, clamping pins **60** are located within the entry portions **66** of the guide slots **70**. The sidewalls **43** being connected to the clamping pins **60** are spaced apart a distance which permits a toothbrush to be freely inserted into the receptacle **41**.

Once the toothbrush is inserted , the cam guide **64** is moved forward and above the receptacle **41**. This action causes the clamping pins **60** to move within the compressing slots **67**. The clamping pins **60** are forced laterally inwardly by the camming surface of the compressing slots **67**, resulting in a laterally inward compression of the sidewalls **43** and the clasping edges **45**. The deformation effect upon the brush bristles by this compression is the same as discussed in the third embodiment. A continued forward movement of the cam guide **64** forces the clamping pins **60** into the retaining position **68**, thereby placing the apparatus in the clamping position. The apparatus should be left in this position to maximize proper deformation of the brush bristles.

Further forward motion of the cam guide **64** forces the clamping pins **60** into the insert portal **69**. Manual manipulation of the clasping pins inward and downward will allow the securing flanges **63** to pass through the insert portal **69**, thereby disengaging the receptacle **41** from the camming housing **64**. This manual manipulation aids only in the assembly and disassembly of the apparatus and does not in any way further the application of the apparatus in molding the bristle structure of a toothbrush.

With proper utilization of these preferred embodiments, the bristles are thus formed into a well-defined upper and lower wedge having their apexes joined along the compression line. The bristles eventually take a permanent set and are deformed substantially in a controlled and desirable manner. In as much as the flare of the wedge forces the lower bristles together, the uncontrolled splaying that occurs in the normal brush does not occur here. Thus, the present invention utilizes and enhances the natural wear characteristics of the bristles to form the cohesive mass of fibers which enable the user to properly address the sulcus region of the gum line.

By placing the wet brush in the receptacle and closing the mechanism after each use the bristles will be formed and maintained in their proper orientation just as described in my application Ser. No. 199,373. While the end result of my apparatus and its predecessor are the same, it will be appreciated that the novel structure described herein is far more amenable to widespread use and the promotion of proper dental hygiene.

While I have shown my invention in various forms, it will be obvious to those skilled in the art that it is not so limited but is susceptible of various changes and modifications without departing from the spirit thereof.

What I claim is:

1. Apparatus for training the bristles of a toothbrush, having an elongated handle portion with a plurality of bristles at one end thereof, into an upper wedge shaped portion and a lower wedge shaped portion with each

portion diverging laterally from a line at a preselected height on said bristles, comprising:

(a) a receptacle having a bottom connected to a first and second spaced apart sidewall, for receiving the one end of the handle portion and the plurality of bristles thereon, longitudinally therewithin;

(b) means for clamping said bristles along a predetermined line mounted within said receptacle and extending longitudinally therewithin in spaced apart relation for receiving said plurality of bristles therebetween, wherein said clamping means comprises a first and second clamping edge, being integrally connected to and a part of said receptacle and extending longitudinally along said respective first and second sidewalls in spaced relation for receiving said plurality of bristles therebetween; and

(c) means for selectively urging said clamping means together whereby a clamping force is applied to said plurality of bristles along a line defined by said clamping means with said urging means having a pair of clasping wings integral with said sidewalls, and extending outwardly from a space formed intermediate said sidewalls with a pair of marginal edges formed by said clasping wings tapering inwardly toward said space formed intermediate said sidewalls to form camming surfaces that converge from an entrance end of said receptacle to a closed end of said receptacle, and said urging means further having means for compressing said clasping wings inwardly toward said space a predetermined distance to urge said first and second clamping edges against said plurality of bristles, wherein said compressing means is comprised of a pair of elongated cam tracks, connected on one end thereof by a closing brace which extends transversely therebetween and connected on the opposite end by a C-shaped brace, extending therebetween, which allows said clasping wings to be inserted within said cam tracks and wherein said compressing means, when urged along said clasping wings, guides said tapered clasping wings inwardly toward said space.

2. Apparatus for training the bristles of a toothbrush, having an elongated handle portion with a plurality of bristles at one end thereof, into an upper wedge shaped portion and a lower wedge shaped portion with each portion diverging laterally from a line at a preselected height on said bristles, comprising:

(a) a receptacle having a bottom connected to a first and second spaced apart sidewall, for receiving the one end of the handle portion and the plurality of bristles thereon, longitudinally therewithin;

(b) means for clamping said bristles along a predetermined line mounted within said receptacle and extending longitudinally therewithin in spaced apart relation for receiving said plurality of bristles therebetween, wherein said clamping means comprises a first and second clamping edge, being integrally connected to and a part of said receptacle and extending longitudinally along said respective first and second sidewalls in spaced relation for receiving said plurality of bristles therebetween; and

(c) means for selectively urging said clamping means together whereby a clamping force is applied to said plurality of bristles along a line defined by said clamping means with said urging means having a pair of clasping wings integral with said sidewalls, and extending outwardly from a space formed intermediate said sidewalls with a pair of marginal edges formed by said clasping wings tapering inwardly toward said space formed intermediate said sidewalls to form camming surfaces that converge from an entrance end of said receptacle to a closed end of said receptacle, and said urging means further having means for compressing said clasping wings inwardly toward said space a predetermined distance to urge said first and second clamping edges against said plurality of bristles wherein said compressing means is comprised of a pair of elongated cam tracks, connected on one end thereof by a closing brace which extends transversely therebetween and connected on the opposite end by a C-shaped brace, extending transversely, which allows said clasping wings to be inserted within said cam tracks, wherein said cam tracks converge from said entrance brace toward said closing brace in equal proportion to convergence of said marginal edges of said clasping wings and guide said clasping wings inserted therein inwardly toward said space.

3. Apparatus as described in claim 2 further comprising as top plate, extending transversely between said cam tracks, defined by a pair of angled camming surfaces located on an edge of said stop plate which faces toward said closing brace and contact a pair of locator pins formed on said clasping wings when said apparatus is in an open position, said locator pins contacting said closing brace when said apparatus is in a closed position.

* * * * *